



PC Builder

Does your computer drive you mad because it sounds like a lion in a roaring contest? Turn it into a snoozing pussycat by following Josh Blodwell's expert tips



■ PERPENDICULAR DRIVES BEGIN PRODUCTION

The first drives using perpendicular recording to achieve the highest ever data density have begun production.

The traditional method of recording data magnetically on hard disks has almost reached its theoretical limits, with 2½" hard disks, for instance, stuck at a maximum capacity of 100GB. Perpendicular storage changes the way each bit of data is organised on the drive platter and will increase the capacity of drives by as much as 10 times.

The first drives are destined for use in devices such as MP3 players, and have already begun production at both SDK and Hitachi. Seagate has promised 160GB 2½" disks by the first quarter of 2006. You can expect 3½" desktop drives with over a terabyte of storage by 2007.

For some people the most pleasurable part of using their computer is turning it off. The sound that PCs emit can be a constant irritation, turning simple tasks into irksome chores. There's no need to put up with it, though, as there are many cheap and simple ways to reduce noise levels and banish irritating high-pitched whines.

Trying for total silence can be expensive. PC cases in the Zalman Totally No Noise (TNN) range cost as much as a second-hand car, with the top-of-the-range TNN500 available for £816 including VAT from QuietPC (www.quietpc.com/uk). But you can get reasonable results for peanuts by applying a few simple principles.

The first and easiest way to quiet your system is to change your CPU and graphics card heat sinks. A great heat sink for your CPU is the Arctic Cooling Freezer, which is available for £16 from Tekheads (www.tekheads.co.uk). You need to make sure you get the correct one for your CPU socket type: Socket A, 478, 939 or 754. Follow the instructions in the box closely, or you could fatally damage your processor by fitting the heat sink poorly.

After you've changed the CPU cooler, look at your graphics card fan. Some models, notably the nVidia FX and 6X series of cards, make a racket when they run and cannot be slowed down using software, so the normal solution is to change the heat sink itself. The simplest heat sink available now

is the Silencer, also by Arctic Cooling. There are several types, each of which is designed for a single card type, so get the correct model. Yoyotech (www.yoyotech.co.uk) stocks the full range and prices vary from £5.69 for the GeForce FX5700 model to £17.45 for the GeForce 6800Ultra/GT. Again, follow the fitting instructions carefully.

With any problem processor and CPU coolers replaced we can now focus on the rest of the PC, with some really low-cost techniques. Our PC silencing tips are not necessarily high-tech, but they are easy to understand and implement. You'll be amazed at what you can achieve with a vacuum cleaner, a paintbrush, some elastic bands and some earplugs. Madness, you say? Well, just read on.

1

Dirty fans can be a major source of noise in a PC. A thick layer of dust can build up on the blades and the casing, making them beat into the air rather than cutting through it. If you're a non-smoker the build-up of dust should be light and easy to wipe off with a dry cloth. If you smoke, however, you probably have a tarry mess on your fan blades. To get rid of this muck you'll need to use some kind of cleaning fluid. Any kitchen spray that purports to cut through grease will do.

Spraying fluids inside your PC is a very bad idea, so remove each fan from its mounting by unscrewing the screws at each corner, unplug it

REVIEW FAN CONTROLLER

ZALMAN ZM-MFC1

RATING ★★★★★

PRICE £18 inc VAT

SUPPLIER www.quietpc.com/uk

Though bereft of screens or temperature readouts, the Zalman ZM-MFC1 is an excellent fan controller. It allows control of six fans in total. Rheostats control four of these fans, and if your fans have a speed monitor wire an LED represents the speed of each. The final two fan controls have three settings: 12V, 7V, and off. You have to screw the bare wires to the back of the switch, as you would wire a plug, which means you have to strip the wires and remove the original connector. Because it's such a simple design it's also easy to use, and it looks nice too.



REVIEW FAN CONTROLLER

AEROCOOL CoolPanel

RATING ★★★★

PRICE £20 inc VAT

SUPPLIER www.tekheads.co.uk

The CoolPanel is the same size as the ZM-MFC1, but it provides only two fan controls. Each fan has its own mechanical wheel control, alarm and temperature probe. There's also a flashing display and audible tone that sounds when the temperature probe detects overheating.

The CoolPanel's controls are quite small, especially as a built-in 8-in-1 card reader and headphone, mic, and line-in ports are all crammed into the same panel.



REVIEW FAN CONTROLLER

ZALMAN FanMate

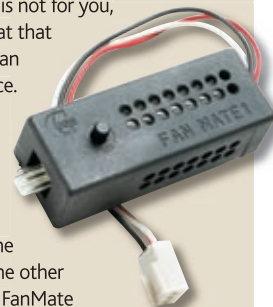
RATING ★★★

PRICE £7 inc VAT

SUPPLIER www.kustompcs.co.uk

If you like dials and flashing lights, Zalman's FanMate is not for you, as it's just a rheostat that fits between your fan and its power source.

It's easy to fit and use, but as you install it inside your PC case you have to take the side off to adjust the fan speed. Unlike the other fan controllers, the FanMate controls only a single fan and has no temperature sensors or overheating alarms. What it has in spades, though, is simplicity. Mind you, fan for fan the ZM-MFC1 beats it on price.





from the motherboard or case wiring and clean it away from the PC. We have a couple of other tips that involve removing the fan, so you needn't feel that your efforts are wasted.

With your fan removed you can clean it properly. Spray a dose of cleaner on your cloth – not so much that it's soaking – and wipe each blade individually, pinching it between your fingers and pulling firmly from the hub of the fan to the tip of the blade. When you've done all the blades you need to clean inside the fan housing. Wrap a little cloth around your finger, stick it between two of the fan's blades and firmly wipe around the inside edge of the frame. Finish by giving the whole fan a quick suck with the nozzle of a vacuum cleaner. Your fan should be noticeably quieter as a result.

2 Fans generate much of their noise by transmitting vibrations to the case, so when you replace your cleaned fans it's a good idea to isolate them from the case with a strip of rubber. You can buy isolation shrouds that fit between your fan and case, but you can get the same effect for free by using thick elastic bands. You need to cut four strips of elastic band, one for each edge of the fan. Cut your band once to make it into a single strip, then use the fan itself as a guide to cut each length. Next, apply just enough Pritt Stick to the elastic strips to stick them along each edge of the fan. Make sure you attach the elastic to the side of the fan that was originally in contact with the case. If you've forgotten which way round they went, follow the general rule that fans at the front of your case suck air in while those at the back expel it. Each fan should have an arrow on one side of its frame that shows the air direction.

When the rubber strips are in place, carefully reattach the fan, taking care that the elastic doesn't interfere with the blades. To isolate the fan even more, you could use isolation mounts: small rubber plugs that replace the mounting screws to reduce transmitted vibration even more. These are quite expensive, though, at 58p each (search for 'fan isolator mount' at www.kustompcs.co.uk).

3 Your fans will probably still make noise, either because the bearings are worn or simply because they are spinning fast. When air is forced through the fan grilles it makes a whooshing sound, while buzzing indicates a worn bearing. You can minimise air noise by supplying the fan with less power. If you're lucky and your fans connect directly to your motherboard, this may be as simple as going into your BIOS and setting your fans to automatic control. To do this, hit Delete at the boot screen, find the section in your BIOS that controls the fan and set the fans either to automatic or half speed.

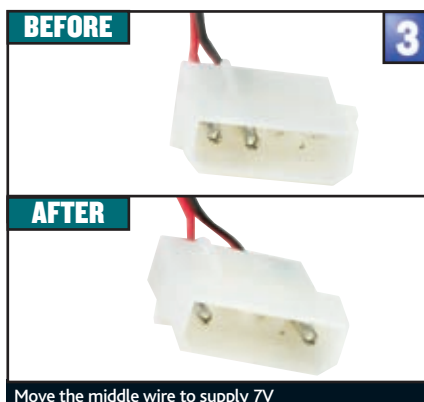
If your BIOS doesn't offer this option, check for a BIOS upgrade at your motherboard manufacturer's website. If this doesn't help and your fans are on a Molex connection, you can try slowing the fans physically by under-volting them to 7V instead of 12V. You do this by attaching the fan between the 5V and 12V pins, which is a simple matter of moving one connection. You need to move the middle wire to the vacant end position as shown in the picture above. You can either push in the retaining tabs on the plug with a tiny screwdriver and pull the element out from the wire, or use a specially designed extraction tool, which you can buy for £6 from Kustompcs. Some older



Clean fan blades from the hub outwards



An arrow indicates airflow if you forget fan orientation



Move the middle wire to supply 7V



Connect a rheostat in series with your fan

fans may not work at 7V – after all, they are designed to run at 12V. If so, try an intermediate voltage using a rheostat as described below.

4 If your PC uses only the small three-pin plugs, attaching a rheostat is the only option short of buying a dedicated fan controller. This is relatively easy to do. All you need is a soldering iron and solder, a rheostat and a sharp knife to cut and clean the wire. Rheostats (also called potentiometers) are available from Maplin for 99p each: buy a 100-Ohm unit (part code FW05F). To install it you must attach it in series on the yellow wire or adjacent black one. First cut this wire with your knife and remove a little of the shielding. Then solder the wire to pins one and two as shown above.

To prevent the metal case touching delicate components and shorting them out you can cover them in tape or mount them into a spare blanking plate at the back of the case where your PCI slots are. Do this by drilling an appropriately sized hole in a blanking plate. You may also need to extend the wire you have cut. Now you can set your fans to a lower speed when you want some peace and turn them up if your computer is running too hot.

CUT OUT THE CLICK

Hard disks are another cause of computer noise, but these can prove more troublesome to silence. When drives spin, and especially when they access data, they can make a lot of mechanical noise, which is amplified by the metal in your case. The simplest way to hush them is to buy a specialised caddy, such as Zalman's Hard Drive Heatpipe Cooler (£23.50 from Kustompcs), which fits in a 5¼" bay and isolates the drive from the case.

If that seems too expensive, all is not lost as you can achieve similar results with a little effort. The tried and tested method is to use grommets,

which are small rubber flanges that minimise the transfer of vibrations to the case. Before you can fit them you must remove all your PC's components, as you need to drill wider holes in the case for the grommets to fit properly.

You will need a pack of grommets (four or six for each drive), a drill bit to suit the diameter of your grommets and some drive screws that are slightly longer than normal. To work out which case holes you need to widen, look for the marks left by the screws that held the disk in place. Drill them out and squeeze the grommets into place. You can then screw your drive back in using the longer screws, taking care not to touch the delicate electronics underneath as the drive is no longer earthed until you plug the power cable back in. Don't screw the drive in too firmly, as you need the play that the grommets allow to isolate the drive from the case.

If this sounds like too much work, you could attach your disk to a side panel of your case using Velcro strips. This also damps vibrations pretty well.

For even better isolation, use foam earplugs. You will need two sets. Remove the drive from its cage and place it on the floor of your case. Then, taking the four earplugs, place one underneath each corner of your drive. You can glue the earplugs to the bottom of your PC case if you like, but not to the drive itself. This is a highly effective method of isolating drives, but it's suitable only if your PC is kept still and safely out of harm's way. If you move your computer or someone tumbles into it, the drive may be dislodged, damaging it or other expensive components in your case. ☹

NEXT MONTH

PAINT YOUR PC

How to perform a professional-looking case respray